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| 10/537,334 | 06/02/2005 | Pekka Strommer | PLA077-825508 | 3452 |

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| EXAMINER | |
|---|---|
| MIDKIFF, ANASTASIA | |
| **ART UNIT** | **PAPER NUMBER** |
| 2882 | |
| **NOTIFICATION DATE** | **DELIVERY MODE** |
| 08/13/2008 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO@WOLFBLOCK.COM

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/537,334 | STROMMER ET AL. | |
| | **Examiner** | **Art Unit** | |
| | ANASTASIA MIDKIFF | 2882 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *15 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-29 and 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 8-22, 24, 25, 28, 29, and 31* is/are rejected.

7)☒ Claim(s) *7,23,26 and 27* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8-22, 24, 25, 28, 29, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent to Spivey et al. (US 5,712,890).

With respect to Claims 1 and 15, Spivey et al. teach a digital mammography method (Abstract), in which:

- detecting radiation that has passed through an object on at least one sensor (54), said object being a breast (49), each of the at least one sensor containing at least one sensor module (63; Column 11, Lines 58-67);
- wherein the at least one sensor module (63) contains one or more pixel columns which receive image data (Column 12, Lines 38-42);
- arranging the object (49) to be imaged in a compression structure (50, 51) that is essentially motionless with respect to the source and detector (Column 13, Lines 8-11), the compression structure comprising an essentially plane-like upper compression paddle (50, Figure 7) and an essentially plane-like lower compression paddle (51; Figure 7) wherein

said paddles are radiolucent, allowing x-rays to pass through (Column 5, Lines 65-67 and Column 6, Line 1);

- scanning across said object with a beam which originates from a radiation source (40) having a focus (Column 13, Lines 8-10 and 22-24; Figure 11);
- wherein the focus of the radiation source is essentially motionless in space (Column 13, Lines 23-28; Figure 11);
- limiting the beam to be narrower than the object (49) to be imaged and adapted essentially to an active surface of the at least one sensor (Figure 11; Column 13, Lines 26-28);
- moving the at least one sensor (54) in synch with the scanning movement of the beam (Column 13, Lines 8-11) while at the same time the active surface is kept essentially at right angles to the beam on a plane formed by the scanning movement of the beam (Column 13, Lines 14-17 and Figure 11); and,
- implementing the movement of the at least one sensor (54) by continuously adjusting the distance of the at least one sensor from the radiation source (40) in such a way that the trajectory of the at least one sensor (54) underneath said breast (49) is an essentially linear movement in the direction of the scanning movement of the beam (Column 13, Lines 13-17; Figure 11).

With respect to Claim 16, Spivey et al. teach a digital mammography imaging apparatus (Abstract), which includes:

- a radiation source (40);
- a sensor arrangement (54) for detecting radiation, which arrangement contains at least one sensor formed of at least one or more sensor modules (63), said at least one sensor module containing one or more pixel columns which receive image data (Column 12, Lines 38-42);
- a compression structure (50, 51) for positioning an object to be imaged, said object being a breast (49), located within the area between the radiation source (40) and the sensor arrangement (Figure 7), the compression structure comprising an essentially plane-like upper compression paddle (50, Figure 7) and an essentially plane-like lower compression paddle (51; Figure 7) wherein said paddles are radiolucent, allowing x-rays to pass through (Column 5, Lines 65-67 and Column 6, Line 1);
- means (45) for limiting a beam from the radiation source essentially according to an active sensor surface of the said sensor arrangement (Column 13, Lines 26-28; Figure 11);
- means (45) for moving the beam across the object being positioned to be imaged (Column 13, Lines 24-28); and,
- means (88, 90, 122) for moving the said at least one sensor of the at least one sensor arrangement (Column 13, Lines 13-23) in synch with the scanning movement of the beam (Column 13, Lines 8-11 and 23-29) and keeping the said active sensor surface essentially at right angles to the beam on a plane formed by the scanning movement (Column 13, Lines 13-17; Figure11);

- wherein the imaging apparatus includes means (88) for adjusting the distance of the at least one sensor (54) from the radiation source in a way that the trajectory of the at least one sensor in the direction of the scanning movement of the beam becomes essentially linear and takes place beneath the breast (Column 13, Lines 8-17; Figure 11).

With respect to Claims 2, 3, 17, and 18, Spivey et al. further teach that said at least one sensor (54) is translated by an actuator and by mechanically forced control (Column 15, Lines 47-52).

With respect to Claims 4, 19, and 20, Spivey et al. further teach that said at least one sensor (54) is moved in such a way that the sensor is connected to a transmission element (88), which is moved along an essentially linear trajectory (in 90; Figure 11) and the said connection is realized in such a way that the connection enables mutual rotational movement of the transmission element and the at least one sensor in the direction of said linear movement (Column 13, Lines 18-22; Figure 11), whereby the said condition of perpendicular orientation of the sensor surface (55) is realized by tilting the at least one sensor with respect to the transmission element (Column 13, Lines 13-17; Figure 11).

With respect to Claims 5, 6, 10, 21, 22, and 25, Spivey et al. further teach that said at least one sensor (54) and a collimator element (45) for limiting the beam are arranged in functional connection with a control element (grooved wheels with linear position sensors; Column 15, Lines 47-50), said control element, in conjunction with tilting movement of said sensor, enabling altering the distance between the at least one

sensor and the control element in the direction of the beam so that the trajectory of the sensor is linear (Figure 11), said control element moved along a curved trajectory (Column 15, Lines 47-50) in a guide groove rail (Column 15, Lines 47-50), wherein the curvature of said guide groove corresponds to the distance between the control element and the radiation source to keep the sensor on a linear trajectory (Column 15, Lines 47-50, Figure 11).

With respect to Claims 8, 9, 24, and 28, Spivey et al. further teach that the scanning movement of the beam is realized by moving a collimation element (45) attached to the source (40) that limits the beam (Figure 11), said source being under the control of an x-ray controller (in computer, 18) and a motor controller (in main computer 72; Column 13, Lines 30-31) so that said collimation element is moved essentially in parallel with the said linear movement of the sensor (Column 13, Lines 24-26, Figure 11) using an actuator (Column 13, Lines 19-31).

With respect to Claims 11-13, and 31, Spivey et al. further teach that the radiation source is swiveled, remaining stationary in space but rotating about itself (Figure 11) and that mechanical movement of the collimation element (45) and the mechanical, linear movement of the at least one sensor (54) is synchronized (Column 13, Lines 22-29; Figure 11) through mechanical connection (Column 15, Lines 44-55).

With respect to Claims 14 and 29, Spivey et al. further teach that the sensors (54) are arranged to be formed, at right angles to the plane formed by the scanning movement (Figure 11), of at least one sensor column containing two or more modules

(63) and the active surface of each of the modules also being positioned at right angles with respect to the focus of the beam (Column 13, Lines 13-17; Figure 11).

***Allowable Subject Matter***

Claims 7, 23, 26, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to Claims 7 and 23, the prior art of record teaches many of the elements of the claimed invention, including a digital mammography imaging method and apparatus, including detecting radiation that has passed through an object on at least one sensor, said object being a breast, each of the at least one sensor containing at least one sensor module; wherein the at least one sensor module contains one or more pixel columns which receive image data; arranging the object to be imaged in a compression structure that is essentially motionless with respect to the source and detector, the compression structure comprising an essentially plane-like upper compression paddle and an essentially plane-like lower compression paddle wherein said paddles are radiolucent, allowing x-rays to pass through; scanning across said object with a beam which originates from a radiation source having a focus; wherein the focus of the radiation source is essentially motionless in space; limiting the beam to be narrower than the object to be imaged and adapted essentially to an active surface of the at least one sensor; moving the at least one sensor in synch with the scanning movement of the beam while at the same time the active surface is kept essentially at right angles to the beam on a plane formed by the scanning movement of the beam;

and, implementing the movement of the at least one sensor by continuously adjusting the distance of the at least one sensor from the radiation source in such a way that the trajectory of the at least one sensor underneath said breast is an essentially linear movement in the direction of the scanning movement of the beam; wherein said at least one sensor is moved in such a way that the sensor is connected to a transmission element, which is moved along an essentially linear trajectory and the said connection is realized in such a way that the connection enables mutual rotational movement of the transmission element and the at least one sensor in the direction of said linear movement, whereby the said condition of perpendicular orientation of the sensor surface is realized by tilting the at least one sensor with respect to the transmission element; and wherein said transmission element or a control element is moved integrated with a pendulum arm.

However, prior art fails to teach or fairly suggest the method and apparatus wherein said pendulum arm has a center of rotation that is situated on the level of the focus of the radiation source, in the manner required by Claims 7 and 23.

With respect to Claim 26, the prior art of record teaches many of the elements of the claimed invention, including a digital mammography imaging method and apparatus, including detecting radiation that has passed through an object on at least one sensor, said object being a breast, each of the at least one sensor containing at least one sensor module; wherein the at least one sensor module contains one or more pixel columns which receive image data; arranging the object to be imaged in a compression structure that is essentially motionless with respect to the source and detector, the

compression structure comprising an essentially plane-like upper compression paddle and an essentially plane-like lower compression paddle wherein said paddles are radiolucent, allowing x-rays to pass through; scanning across said object with a beam which originates from a radiation source having a focus; wherein the focus of the radiation source is essentially motionless in space; limiting the beam to be narrower than the object to be imaged and adapted essentially to an active surface of the at least one sensor; moving the at least one sensor in synch with the scanning movement of the beam while at the same time the active surface is kept essentially at right angles to the beam on a plane formed by the scanning movement of the beam; and, implementing the movement of the at least one sensor by continuously adjusting the distance of the at least one sensor from the radiation source in such a way that the trajectory of the at least one sensor underneath said breast is an essentially linear movement in the direction of the scanning movement of the beam; wherein said at least one sensor is arranged in functional connection with a control element, said control element enabling altering the distance between the at least one sensor and the control element in the direction of the beam so that the trajectory of the sensor is linear, said control element moved along a curved trajectory in a guide groove rail, wherein the curvature of said guide groove corresponds to the distance between the control element and the radiation source to keep the sensor on a linear trajectory; and wherein the apparatus includes a pendulum arm attached to the apparatus or the control element.

However, prior art fails to teach or fairly suggest the method and apparatus wherein said pendulum arm has a center of rotation that is situated on the level of the

focus of the radiation source, and whereby the sensor(s) can move in the direction of the longitudinal axis of the pendulum arm or the pendulum arm itself has been arranged to be adjusted in length, in the manner required by Claim 26.

Claim 27 would be allowable by virtue of its dependency.

## *Response to Arguments*

Applicant's arguments with respect to the prior art rejections of the claims have been considered but are moot in view of the new ground(s) of rejection.

## *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent to Strömmer (US 5,872,364) teaches a mammography system and method with narrow source beam, collimating elements, sensor, and linear movement of same.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANASTASIA MIDKIFF whose telephone number is (571)272-5053. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. M./
Examiner, Art Unit 2882
5/7/08

/Edward J Glick/
Supervisory Patent Examiner, Art Unit 2882